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JUTE AND HARD FIBRES: OVERVIEW OF MAJOR CURRENT ISSUES

Report by the UNCTAD secretariat

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I. Introduction

The jute and hard fibres (JHF) group encompasses a range of natural fibres which are produced from different plants grown almost exclusively in the developing world. According to the inherent characteristics and the prevailing end-use of the fibre, the whole group can further be subdivided into two major groups, namely: (a) jute, kenaf and allied fibres, belonging to soft fibres; and (b) sisal and henequen, plus two minor fibres, coir and abaca, which are hard fibres.

The main traditional use of jute and kenaf (called also hard jute) has been in the packaging market as cloth and sacks. Bags made of these fibres are widely used for the transport and storage of agricultural products, fertilizers, cement and some chemicals. The bulk of sisal and henequen production, both of which are produced from plants belonging to the agave family, goes into the harvest twine. For abaca, it goes into specialty papers and ropes, for white coir (coir being a coconut fibre) into floor coverings and for brown coir into rubberized pads and mattresses. Applications of these fibres overlap only at the margins, with jute and sisal also being used in the production of paper, sisal and coir in floor coverings and abaca and coir in ropes. In no case, however, does any of these fibres share a major end-use with another one.

The jute group holds a dominant position among the fibres covered by this report in terms of its share in the world output of raw fibre (82 per cent in 1992/93) and in the world trade in raw and processed fibre products (72.6 per cent in 1992/93), followed by sisal and henequen (8.7 and 12.8 per cent, respectively), coir (7.4 and 5.6 per cent) and abaca (1.9 and 9.0 per cent).

JHF are relatively unimportant in terms of value in international trade if compared to many other commodities - their combined share in all developing country merchandise exports in 1992 only slightly exceeded 0.1 per cent, totalling US$ 837 million. Despite this fact, the production and trade in these fibres have an important positive impact on a number of developing countries. First, they represent one of the rare commodities that are not only almost exclusively cultivated in developing countries, but for which also a great part of processing takes place in this part of the world. This trend has even been increasing over time. Secondly, JHF continue to contribute significantly to export earnings of some countries, such as Bangladesh where exports of jute and jute products accounted for 7.4 per cent of the country's export earnings in 1990/91. Thirdly, the cultivation and processing of JHF are relatively labour-intensive and, hence, job creating. As a result, they provide significant economic support to the population in certain most impoverished and least-developed areas of a number of producing countries. Growing JHF is at times the only source of cash income for large populations of subsistence farmers. For example, more than 12 million farm families are engaged in the cultivation of jute in the Asia-Pacific region.[1] In India alone, about 4 million farmers obtain their livelihood from growing jute and an additional 250,000 workers are employed in the jute industry.[2]

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[1] **International Jute Organization: Jute and the IJO, Dhaka 1994, p.9.**

[2] **B.L. Sharma: Trade barriers to diversified jute products from India, ESC: JU/IC 93/18, FAO, Rome 1993, p.3.**

The objective of this study is, first of all, to assess the main trends in the production, consumption and international trade of JHF products made thereof and to analyse the underlying causes of these trends. Chapter II is dedicated to this type of analysis. Since the overall JHF exports follow a long-term declining trend, Chapter III explores in greater detail the factors that are behind these negative developments. Finally, Chapter IV is more solution-seeking, bringing some suggestions on the actions which may be required to strengthen the JHF market in the short and longer run.

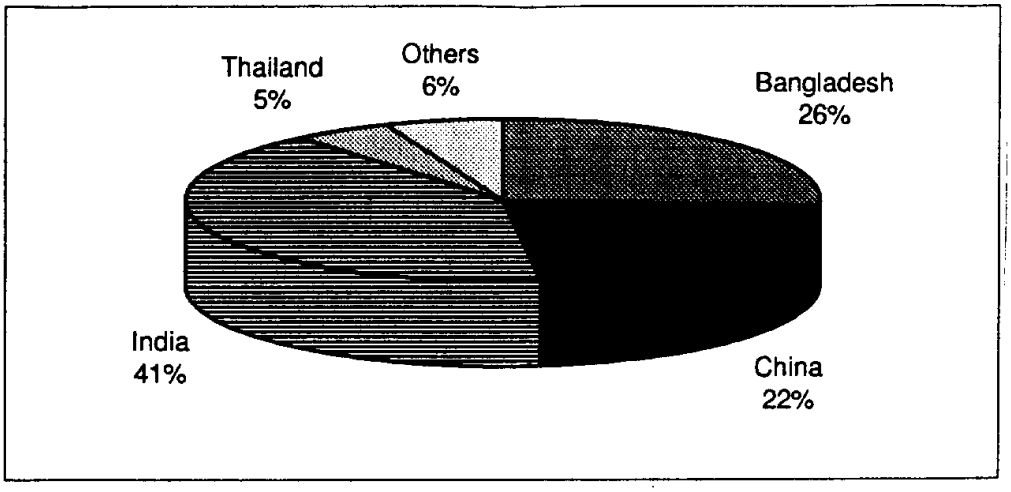
II. Trends in production, consumption and international trade

A. Structure and trends in production

1. Raw fibre

The production of jute group fibres is concentrated in Asia, with the four major producing countries - India, Bangladesh (jute), China and Thailand (kenaf) - accounting for 94 per cent of the world output in 1993/94 (see chart 1). Historically, more than half of the world's supply was produced in the area now constituting Bangladesh and nearly one third was grown in India. Thailand emerged as an important producer in the 1960s, followed by fast growing China in the 1970s. Nowadays, India accounts for 41 per cent of the world production (1993/94), with Bangladesh ranking second (26 per cent) and China third among the world's largest producers (22 per cent).

Chart 1. Regional shares in world production of jute/kenaf
(1993/94, in percentage)



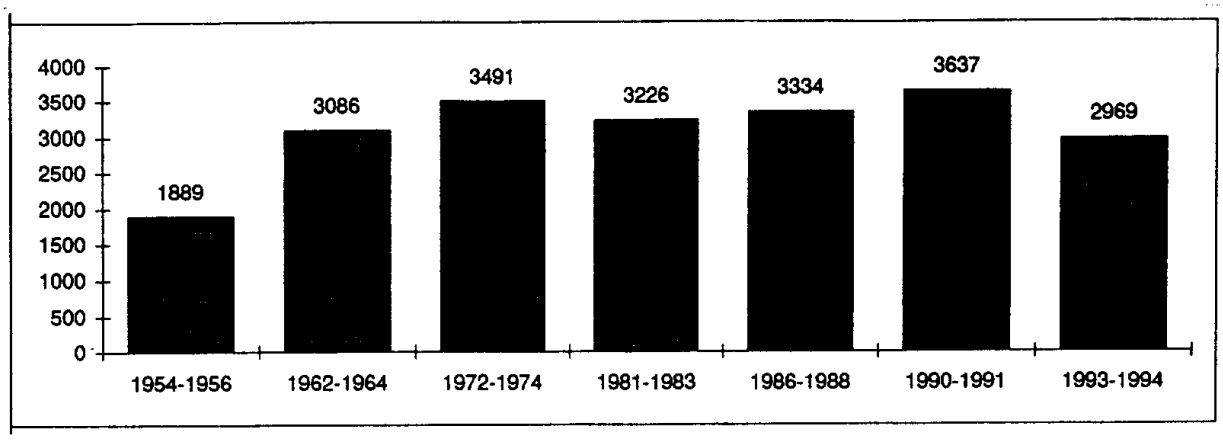
Source: calculated on the basis of FAO: Statistics on jute, kenaf and allied fibres, June 1994.

Production of jute is strongly responsive to: (a) trends in demand (see chapter II.B below);(b) price developments; and (c) seasonal climatic conditions. Unfavourable relative prices of jute vis-à-vis competing crops may discourage farmers from growing jute. In Bangladesh and India, jute competes for land primarily with rice, while in Thailand cassava is jute/kenaf's main competitor. As regards climatic factors, both flooding and, to a lesser extent, drought, are hazards to the cultivation of jute. As a result of variable growing conditions,

jute production and prices may be subject to wide fluctuations from one season to another because demand does not change much from year to year.

World production of raw jute, kenaf and allied fibres rose sharply in the 1960s and since then, it has been fluctuating around the level of 3 to 3.7 million tons per year (chart 2). In 1993-1994 it reached 2.97 million tons, falling in volume for the third consecutive year. The decline was due to diminished producer prices as compared to alternative crops and to unfavourable climatic conditions. However, production in 1994-1995 is expected to increase according to informal estimates.

Chart 2. World production of jute, kenaf and allied fibres, 1954-1994
(Thousands tons)



Source: calculated on the basis of FAO: Statistics on jute, kenaf and allied fibres, various issues.

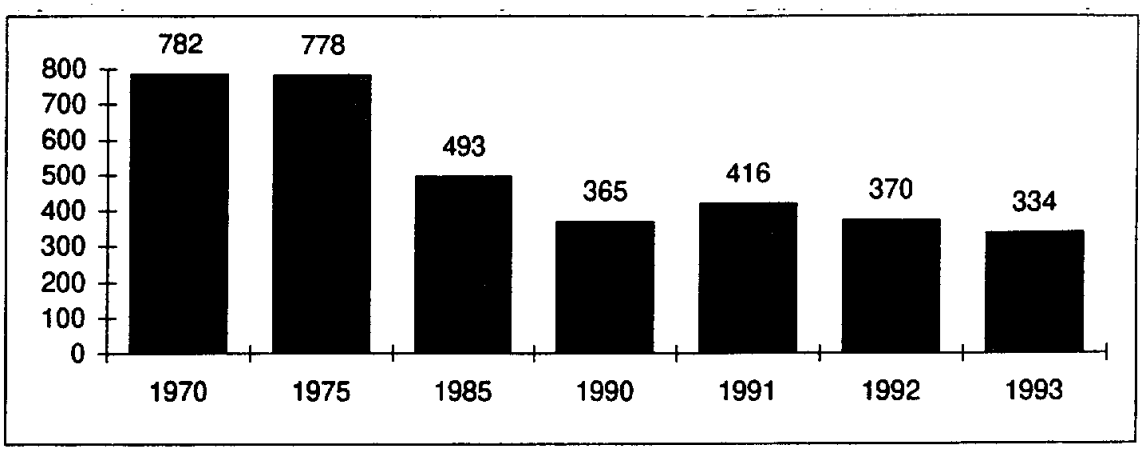
Production of sisal fibre is concentrated in Brazil, Kenya and the United Republic of Tanzania, while henequen is grown almost exclusively in Mexico. Altogether, these four major producers accounted for around 80 per cent of world output in 1992. World sisal fibre output has been constantly falling (between 1970 and 1993 it declined by 57 per cent) from an annual level of 778,000 to 334,000 tons, the lowest level for decades (chart 3). This decline in production was due mostly to the erosion of sisal markets resulting from falling demand.

The decline in production was not distributed equally among the producing countries. The United Republic of Tanzania, which had been the leading world producer in the 1960s with more than one quarter of world output, accounted for less than 10 per cent in the 1980s and early 1990s. By contrast, Brazil increased its share in world production from 21 per cent in 1960-1965 to between 45 and 57 per cent in the early 1990s. Mexican fibre production declined in pace with the general trend, its share being now around 9 per cent. Production in Kenya remained virtually unchanged, which led to a slight increase of its share in world output to 12 per cent in 1993.

Coir is produced by processors as a by-product of coconut oil, desiccated coconut and other coconut products almost entirely in India and Sri Lanka. Both coir fibre and coir yarn production have been expanding over the last years to reach the level of output of 370,000 tons in 1993. India accounted for 57 per cent of the world production of coir fibre in 1993, whereas Sri Lanka's share reached 38 per cent. Indian production continues to expand in response to growing

domestic demand, while Sri Lanka's export-dominated production has been contracting owing to the decline in foreign demand. India's output is expected to increase further in the coming years.

Chart 3. World production of sisal/henequen, 1970-1993
(Thousands tons)



Source: calculated on the basis of UNCTAD Commodity Yearbook 1994 and FAO:Commodity Review and Outlook 1993-94.

Abaca is grown largely in the Philippines as a secondary crop (83 per cent of world output in 1992). The volume of production has remained stagnant at around 70,000 tons per year in the 1970s-1990s, finally reaching 73,000 tons in 1993. Some further expansion is expected in global abaca production, in response to continuation of remunerative prices, and as new plantations in the Philippines come into production.

2. Processed products

Gradual transfer of manufacturing capacities from developed countries together with policies of certain fibre-producing countries to increase local processing have resulted in a rapid development of fibre-processing capacities in major producing countries. Consequently, manufacture of processed goods currently takes place almost exclusively in developing countries. As of 1992/1993, these account for 96 per cent of the world jute-goods production, for example. The same trend is strongly felt in the processing of sisal, being less pronounced for abaca.

Among the main determinants of fibre-goods production levels are supply-side factors, such as the availability of reliable raw material supplies to processing plants, and the developments in demand. As evidenced by recent experience, domestic demand-driven production appears to fare better than production relying mostly on external markets. This is the case of India and China in particular, where the level of production has generally increased over the last years.

B. Trends in demand

Demand for JHF and processed goods made thereof has been under a considerable strain during the post-war period. The main factor responsible for the erosion of the markets for hard fibre was the competition from synthetic products - particularly polypropylene fabrics - in all major end-uses. Another factor that contributed to the reduced consumption was a further shift to bulk handling and containerization for products such as grains, fertilizers and chemicals in the case of jute sacking bags.

Sisal markets were severely affected by the introduction of new harvesting methods that require either less twine in general or the use of synthetic twines.[3] The only fibre that resisted competition from synthetics was abaca, due to the superior properties of its fibre relative to synthetics in its chief end-use, i.e. specialty papers.

Consumption of jute and jute products remained generally stagnant over the last two decades, following a somewhat declining trend since the mid-1980s (see chart 4). The situation, however, diverged between developed and developing country markets. Jute utilization has experienced serious retrenchment in Western European countries and in North America, to a great extent as a result of new bulk-handling techniques and aggressive price competition from synthetic substitutes. Consequently, the share of developed countries in world jute consumption fell from 38 per cent in 1970 to 14 per cent in 1992.

By contrast, in developing countries, the growth of output and trade in agricultural products, as well as other packageable commodities, such as cement and fertilizers, continued to be the major source of underlying strength in jute's market development, contributing to the rise of the share of the developing countries in world jute consumption from 42 per cent in 1970 to 64 per cent in 1992. Although bulk handling of commodities has made significant inroads into international trade, bagging is still extensively used for internal transportation, distribution and storage in developing countries, particularly in rural areas. However, starting from the second half of the 1980s, jute bags have been losing their market to synthetics even in this part of the world, and the existing domestic markets were often maintained because of the deliberate purchase policies of state agencies.

Despite the lack of accurate figures on consumption of sisal and henequen, those two commodities appear to have suffered severe market losses over the years in their traditional end-use of baling twine for agricultural purposes. This trend has been more pronounced in Western Europe where technological developments in baling hay and straw have favoured the use of synthetics in recent years and have thus reduced the share of sisal harvest twine to about one third. The United States therefore remains the world's major consumer as this technology has not yet found there the same widespread acceptance as in Western Europe, polypropylene twine still accounting for only about 30 per cent of all harvest twines consumed.

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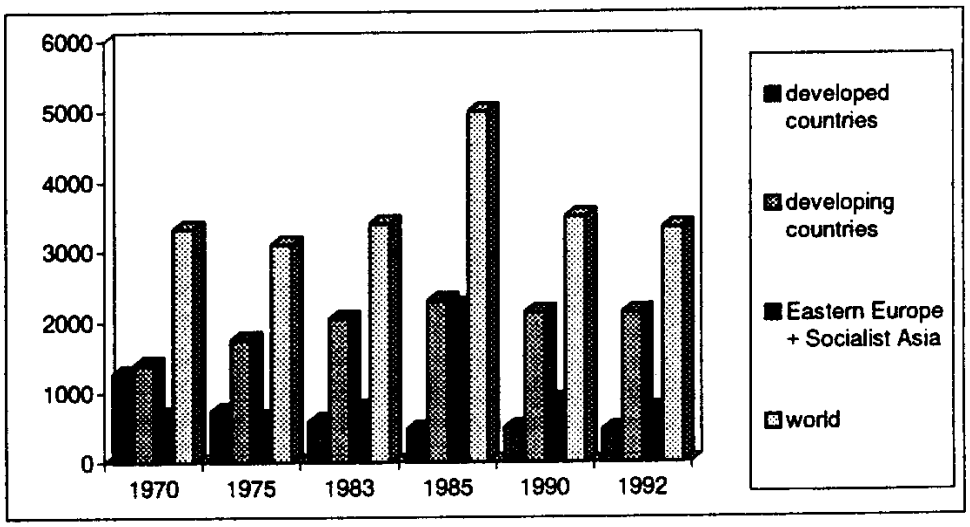
[3] **The popularity of rectangular high-density balers, using exclusively polypropylene twines, is continuing to spread since they provide greater efficiency to harvesting contractors and permit more convenient and economical transport of hay and straw over longer distances.**

Chart 4. Consumption of jute by regions
(Thousands tons)



Source: UNCTAD Commodity Yearbook 1994, pp.267-269.

C. Trends in international trade

The volume and pattern of international trade in JHF have been evolving under the influence of: (a) the generally stagnating or decreasing demand for JHF products; (b) the rising share of raw fibres already being processed in producing countries; and (c) the increasing share of consumption in developing countries.

Consequently, the volume of international trade in raw JHF has been decreasing. Export volume fell by 67 per cent in the case of jute between 1970 and 1993, by 84 per cent for sisal, by 27 per cent for coir and by 58 per cent for abaca. Exports of processed goods in quantitative terms declined less dramatically: for instance, by 35 per cent for jute over the same period, with practically unchanged value of exports in 1993 as compared with 1970. Exports of abaca and coir products even increased by 14 and 31 per cent respectively, between 1988 and 1993, in sharp contrast, however, with a 14 per cent fall in sisal goods exports during these years.

The adverse impact on JHF producers of decreasing export volumes has often been further accentuated by a decline in raw material prices starting in the 1980s. This decline negatively affected jute, sisal and coir. The latter two, however, experienced some recovery in 1993. The only exception from the general trend was abaca, which even registered constant price improvements over the period under review. As a result, the developments in the value of JHF exports have generally been more negative as compared with volume terms.

Table 1. - Volume, value and prices in jute export trade, 1970-1993

	1970	1975	1980	1985	1990	1991	1992	1993
Jute fibre								
Export volume (000 tons)	996	589	551	459	494	350	368	329
Export value (mill. US$)	218	134	203	222	172	135	141	94
Free market Prices (US$/ton)	273	380	314	569	409	344	279	271
Jute products								
Export volume (000 tons)	1292	1090	1291	1088	1026	878	918	843
Export value (mill. US$)	548	631	1221	924	698	606	600	528

Source: data from FAO: Agrostat and FAO: Commodity Review and Outlook 1993-94, pp.127-7 and 131.

Prices of raw jute vary according to quality and origin of products. Price for Bangladesh White D was used as an example in this table.

Table 2. Volume, value and prices in sisal fibre-export trade, 1970-1993

	1970	1975	1980	1985	1990	1991	1992	1993
Export volume (000 tons)	587	279	222	171	133	95	81	96
Export value (mill. US$)	74	131	134	70	64	43	29	34
Free market Prices (US$/ton)	152	580	765	526	715	669	506	615

Source: See table 1.
Prices are for East African UG.

Table 3. Volume, value and prices in coir-export trade 1970-1993

	1970	1975	1980	1985	1990	1991	1992	1993
Coir fibre								
Export volume (000 tons)	90	77	96	79	74	69	71	66
Export value (mill.US$)	9	13	25	16	18	15	17	15
Coir yarn								
Export volume (000 tons)	37	26	22	19	19	19	15	15
Export value (mill.US$)	11	12	17	15	13	12	10	7

Source: See table 1.

Table 4. Volume, value and prices in abaca fibre export trade 1970-1993

	1970	1975	1980	1985	1990	1991	1992	1993
Export volume (000 tons)	59	36	48	33	33	33	27	25
Export value (mill.US$)	16	21	36	23	25	26	26	25
Free market Prices (US$/ton)	-	793	1076	1148	1317	1407	1748	1867

Source : See table 1.
Prices are for the Philippines fibre S2.

Main exporters of JHF and products made thereof generally coincide with major producing countries. The notable exceptions are countries with large domestic markets where production is mainly geared to cater to domestic needs. Therefore, the world's largest exporter of jute and jute products is Bangladesh (60 per cent of world exports in 1992/93), with the world leading producer, India, ranking only second (14 per cent), and the export share of the world's third producer, China, being almost insignificant (6 per cent). Production of sisal, abaca and coir is much more export oriented and hence, the same countries can be found both among major producers and among exporters. Brazil is the

world's largest exporter of sisal/henequen and goods made thereof, with a 53 per cent share in world exports in 1993, followed by Kenya (30 per cent) and the United Republic of Tanzania (12 per cent). Exports of coir fibre are geographically concentrated in one country (88 per cent of exports is accounted for by Sri Lanka only), whilst in exports of processed coir products, a more important share is held also by India. As regards abaca, the Philippines account for a 67 per cent of world exports and Ecuador ranks second with a 31 per cent share.

Rising domestic processing of JHF in producing countries has resulted in a lower share of raw fibre output for export. This trend is the most marked in the case of jute - only 11 per cent of jute output was exported in raw form in 1992/93. Corresponding figures for sisal/henequen were 26 per cent and for coir fibre and abaca 34 per cent each.

At the same time the share of processed products in overall hard-fibre exports rose at the expense of raw material. Manufactures now account for 73 per cent of total jute exports (1993), for 57 per cent of sisal and for 49 per cent of abaca exports.

Given the contraction of markets for JHF and related products due to falling consumption in developed countries, the importance of developing country markets has been on the rise. Shares of both country groups are now practically equal (50 per cent each), with significant differences between the patterns of imports of raw and processed products, however. For example, developing countries import mainly raw jute for further processing (79 per cent of the world's imports in 1993), the largest importer being Pakistan which accounts for 27 per cent of the world's imports of raw jute. Developed countries have still preserved their leadership in imports of processed jute goods - 62 per cent of world total in 1992, out of which around one half goes to the European Union. A major part of world imports is absorbed by developed countries also in the case of sisal (63 per cent in 1992), and coir (77 per cent), and these countries are almost exclusive customers for abaca as well (98 per cent of world imports). The inability to take advantage more of the market potential in developing countries and to satisfy the growing demand in this part of the world through imports was often a consequence of low income and foreign-exchange constraints in those countries.

III. Major constraints to jute and hard fibres exports

Apart from technological changes that have reduced JHF use, the main contributing factor to the gradual erosion of JHF markets is the lack of competitiveness vis-à-vis synthetic fibres. Polypropylene is the single most important synthetic substitute for jute and sisal. The resin is derived by the polymerization of propylene. This, in turn, is manufactured by steam cracking of naphta (which prevails in Western Europe and Japan) or through refining natural gas liquids (United States).

As traditional uses of JHF are mainly in the industrial and agricultural sectors and not in the consumer market, buyers' choice between JHF and synthetic substitutes is mainly based on economic considerations, particularly on price and technical characteristics of both groups of products.

A. Price competitiveness

The structure of the petrochemical industry, which is often vertically integrated, allows for a flexible allocation of cost components between the various outputs at any given stage of the processing chain. At the limit, allocation of these costs may be purely a matter of internal accounting, based on internal transfer price, with the view to maximizing the overall returns of the firm through compensation for losses on one product by gains made on others. This explains a much larger room for manoeuvre of the polypropylene industry allowing for much more aggressive pricing policies. Prices can thus be kept low even for extended periods when manufacturing capacities exceed demand.

Polypropylene products began to make inroads into traditional JHF end-uses in the 1960s and their use has sharply expanded during the late 1970s and early 1980s, particularly in developed countries. The cost competition from synthetic fibres has been particularly intense since the mid-1970s when excess production capacity often resulted in short-term strategies based on recovery of direct costs if full-cost recovery was impossible. The penetration of the market by synthetics was strongly aided by highly competitive prices of imported synthetic bags, particularly from China.

As a result, JHF have been gradually crowded out from some traditional end-uses and markets to a marked degree against the technical advantages and lower prices of synthetic substitutes. This was, for example, the case of primary jute backing for tufted carpets.

The competitive position of JHF and synthetic fibres varies according to products and markets. In general, the price difference is more important at the first stage of the processing chain where polypropylene resin is often more expensive than jute or sisal fibre.[4] In fact, prices of raw jute exceed those of its synthetic competitor rather exceptionally. This was the case, for example, in 1984/85 when jute prices increased sharply due to unfavourable weather conditions in major producing areas bringing about shortages in jute supplies to the international market. Historically, each disruption in supplies resulting in a sharp rise in jute prices has provided synthetics an opportunity for further penetration of jute markets, particularly in developed countries. The argument therefore runs that, when prices of jute go down, the market is not won back and the loss is irreversible.

As regards higher stages of processing, the price difference between JHF and synthetics becomes less significant and the prices move more closely together. Sisal twines tend to be less price competitive than their synthetic substitutes.

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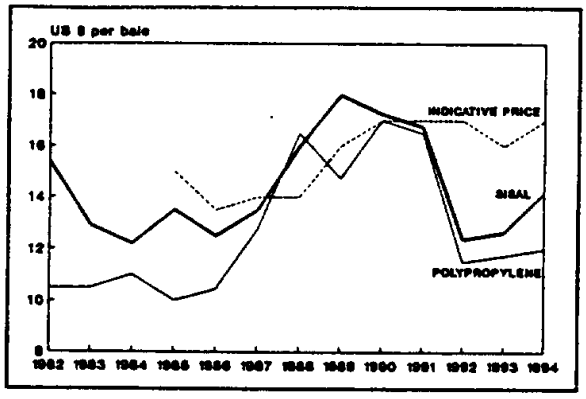
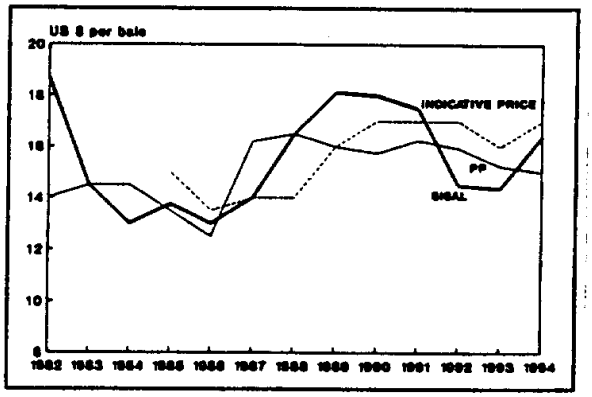
[4] **For instance, the export price of raw jute (BWD grade C&F Antwerpen) in the second quarter of 1994 represented some 61 per cent of that of the polypropylene polymer.**

Chart 5. Prices of sisal and polypropylene twine, 1982-1994
(Dollar per bale)

Europe



United States



Source: Recent developments and short-term outlook for the sisal and polypropylene markets relevant to the formulation of indicative price recommendations, CCP:HF 94151, FAO, August 1994.

By contrast, jute products are generally lower priced as compared with their polypropylene competitors[5]. It seems, however, that the market requires a certain margin to be maintained between both prices. In case the prices are too close and, hence, jute loses a part of its price edge, the buyers' preference may shift to synthetic products.

Only scarce data are available on price competitiveness of JHF vis-à-vis synthetic products in developing countries. According to some rudimentary evidence,[6] prices of jute goods appear to be less competitive than those of synthetic products in developing country markets.[7] Although a preference is traditionally given in developing countries to jute bags, the lack of price competitiveness may pose a threat to the consumption of jute products in the longer run.

B. Non-price factors

The significant inroads made by synthetics into traditional JHF end-uses are not fully attributable to the lack of price competitiveness of the latter.

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[5] For example, the price of jute yarn in the United Kingdom market represented 74 per cent of that of polypropylene yarn in the second quarter of 1994.

[6] e.g. M.E. Thigpen and T. Akiyama: Prospects for the World Jute Industry, World Bank Staff Working Paper No. 14, Washington 1986.

[7] According to a series of country studies undertaken by FAO on Egypt, Ethiopia, Kenya and Indonesia, jute/sisal bags were about 50 per cent more costly than plastic ones in the early 1990s. In Pakistan as well, synthetic bags were priced around half the price of jute bags manufactured domestically from imported jute fibre .

A number of other factors are responsible for these developments, the customer's final choice being always a combined result of a whole range of price and non-price considerations. The major non-price factors affecting JHF versus polypropylene competitive position are summarized in table 5.

Table 5. Non-price factors affecting jute and hard fibres and polypropylene competitiveness

Factor	Jute and hard fibres	Polypropylene
Technical characteristics	+ breathability (jute bags) + reusability and biodegradability + natural look - presence of dust and fine fibres - unsuitable for automatic filling systems	+ high tensile strength and impact resistance + light weight + rot-proof, not shrinkable and water-resistant - danger of flammability and smoke toxicity
Quality	- occasional problems	+ consistent quality
Reliability of supplies	- instability of supplies due to the dependence on weather conditions and a long-distance transport	+ regular supplies, production possible at short notice
Marketing	- absence of an organized marketing system	+ aggressive marketing strategies

Source: UNCTAD Secretariat
+ stands for a positive quality;
- stands for a negative attribute.

Technical characteristics seem to be predominant for some end-uses. Higher tensile strength of polypropylene vis-à-vis sisal, for example, acts in favour of polypropylene twines as strength is crucial for use in rapidly expanding high-density balers. As a result, the choice of twine depends more on technical properties of the fibre than on current relative prices.

As regards jute bags, they have largely been displaced from packing of products where the polypropylene sacks' capacity to be wet-proof is of relevance, particularly in packing chemicals and other industrial products. By contrast, where breathability of the packing cloth is required, together with the maintenance of controlled humidity, jute sacks exhibit superior performance. For this reason, jute bags are preferred, for example, for transport and export of seed potatoes.

Automated sack-filling systems have recently been introduced into packaging. These are well-suited for handling woven polypropylene sacks as the

lightness of these sacks allows them to be lifted by air, something which is not possible with a jute sack. Automation is not only carried out as a cost-saving exercise, but often because of new health and safety requirements for dust-free filling of powdery substances.

A promising impact on jute's competitiveness could derive from re-usability and biodegradability of jute sacks, as well as from the fact that they are made of natural fibres. These aspects of natural fibres are likely to gain further importance with raising environmental consciousness in developed countries and its implementation in practice in the packaging and product disposal legislation. By contrast, the use of jute can be negatively affected by raising interests of health/hygiene according to which food products may not be packed in jute sacks due to the presence of jute dust and fibres.

The use of jute in secondary carpet backing may potentially expand owing to the lower costs of lifting old carpets and higher installation productivity reached by eliminating the need for stretching or heat-seaming. Also, growing concerns over the dangers of flammability and smoke density/toxicity favour the selection of jute cellulosic fibres over synthetic materials.

Complaints are sometimes made about the quality of imported jute yarns, with problems such as slubs, unevenness, poorly tied knots, inappropriate packaging. Any excessive down time of weavers' high-speed looms, caused by poor quality yarn may deteriorate jute's position in the market. A main attraction of polypropylene yarn in this context is consistent quality of the fibre and extra yardage without joins on the yarns, which speeds production.

By their very nature of agricultural crops JHF are more vulnerable to unfavourable weather conditions. Smooth supplies of JHF and products made thereof can also be disrupted due to delays in transportation, strikes or problems of port management and equipment. For these reasons, preference may be given by some buyers to the advantages of regular supplies of polypropylene products from domestic or nearby origins.

Greater financial and market strength and lesser overall vulnerability of polypropylene producers allowed for the concentration of aggressive marketing efforts to penetrate new use areas. Apart from vigorous promotional campaigns their marketing strategies included technical assistance to users and substantial research in product development and adaption. JHF producers found it very difficult to counter this strategy efficiently. As a result, JHF saw their marketing position seriously undermined.

C. Market access

The competitiveness of JHF relative to synthetic materials is also affected by market access conditions. This report sticks to a broader concept of market access, which embraces, in principle, two issues: (a) government-induced trade policy measures affecting imports; and (b) effective access to distribution networks in respective markets.

1. Trade policy market-access barriers

Market access in terms of trade policy measures impeding foreign products to enter the domestic market does not seem to be a major issue for JHF in developed country markets. Raw fibres are imported duty-free as there is no domestic cultivation they could compete with. Tariffs on propylene, which is the raw material needed to produce competing synthetics, are generally set at zero

or a very low level. Imports of polypropylene are taxed at a higher rate, obviously with a view to protecting domestic processing. Consequently, the competitive position of JHF is not adversely affected by tariffs at this stage.

The level of protection, however, rises along the processing chain. This may be geared to the protection of domestic manufacturing industries engaged in the same production line. However, given the obvious trend to the relocation of processing towards developing countries, the validity of this argument may be questioned, particularly in the case of the jute industry which has already undergone a substantial reduction in developed countries. Another and probably more valid reason for protection against imports of JHF products from developing countries may be the protection of domestic synthetics manufacturers who compete directly with imported JHF goods.

Among major importers of JHF products are the European Union (EU), the USA, Japan and, for jute products, also Australia. The level of tariff protection against JHF products is generally not high in these countries. Moreover, as exporting developing countries qualify for Generalized System of Preferences (GSP) treatment (in addition, Bangladesh is classified as an LDC and the United Republic of Tanzania is an LDC and ACP country), they mostly export to developed markets duty free. There are, however, some sensitive items that are not included in the GSP schemes (such as, for example, jute yarn and fabric in the case of the EU) or for which the GSP rates are not set at a zero level (see table 6). The adverse impact of the tariff escalation on exports of processed products is expected to decrease after the Uruguay Round as a result of: (a) the general reduction in most-favoured nation (MFN) rates (for products which are not covered by the GSP) and (b) the phase-out of the Multi-Fibre Arrangement (MFA) (for products that were charged the MFN instead of the GSP rates after exceeding MFA quotas).

Pre-Uruguay Round rates in Australia for the products concerned by this report are the most important in the case of twines and, except jute yarns, are rather strongly biased in favour of JHF as compared with synthetics. The construction of GSP rates follows the same pattern. Also, post-Uruguay Round tariffs are constructed in favour of JHF. The only non-tariff barrier in place is the authorization required for imports of jute sacks.

Overall level of tariff protection for JHF and products thereof in EU countries is between 5.3 and 25 per cent and it will further be reduced on completion of the Uruguay Round. Tariffs on JHF products will be rather low, ranging from 0 to 12 per cent, hence, generally lower than tariffs affecting their synthetic competitors. As yet, all JHF products concerned (except jute fabrics) are already imported free of duty under the GSP. Some products, such as twines and carpets, are still subject to MFA restrictions, but these also should be gradually phased out as a result of the Uruguay Round.

The protection of the Japanese market usually escalates (in MFN rates) with the degree of processing. The only exception are jute sacks which are imported free of duty. The overall level of MFN tariffs will, however, decrease with the implementation of the results of the Uruguay Round. Products at lower stages of processing (such as yarn) will be imported duty-free. Higher tariffs will remain in place only for fabrics (up to 10 per cent) and, to a certain extent, for carpets. A slight bias will remain in the scheme in favour of JHF and products thereof as compared with synthetics. In any case, developing countries do not face practically any tariff barriers under the GSP. Among additional import barriers are, nevertheless, quite important temporary rates, frequent import

authorizations and health and safety regulations. These affect more synthetics and, hence, on the average, tend to favour JHF.

The US market is very liberal as regards the conditions of access for JHF products. MFN rates range from 0 to 7.2 per cent and will be cut practically to zero as a result of the Uruguay Round; GSP imports are duty-free. The level of protection is higher for polypropylene products which also face MFA and textiles exports restrictions more frequently. The non-tariff protection will, however, be phased out following the implementation of the Uruguay Round Agreements.

Table 6. Tariff and non-tariff barriers on imports of JHF and competing synthetic products in major developed country markets
(in percentage)

Country	Product description	MFN tariff [a/]		GSP tariffs	Other barriers
		Pre-UR	Post-UR		
Australia	Raw jute, sisal, coir, abaca	0	0		
	Propylene	2-5	2-5		
	Polypropylene	22.5	10	10	
	Jute yarn	2000	5-15	10	
	Coir yarn		0		
	PP fibres		0		
	Jute fabrics	80	25		
	PP fabrics			27-35	
	Jute, sisal, abaca twines	2030	1515	1818	
	PP twines				
	Jute sacks	0	10		Import authorization
	PP sacks	25-30		10	
	Carpets	0.00	0.00		
European Union	Raw jute, sisal, coir, abaca	0	0		
	Propylene	0-1.5	0-0.7	0	
	Polypropylene	12.5	6.5	0	
	Jute yarn	5.3	-4		
	Coir yarn	0		0	
	PP fibres	7.5		0	

Country	Product description	MFN tariff [a/]		GSP tariffs	Other barriers
		Pre-UR	Post-UR		
	Jute fabrics	8.6-9.3	4	-, 0 for ACP	
	PP fabrics	11	8	0	MFA, voluntary export restraints(VER)
	Jute, sisal, abaca twines	12-25	6-12	0	MFA
	PP twines	12	8	0	MFA
	Jute sacks	5.3-8.6	2-4	0	
	PP sacks	8.4	6.5	0	
	Carpet	6.3-6.9	3-3.5	0	MFA
	Coir carpets	8	4		
Japan	Raw jute, sisal, coir, abaca	0	0	0	
	Propylene	5.8	0	0	
	Polypropylene	32 yen/kg	6.5	0	Temporary rate (TR) 4.6%, health and safety regulations
	Jute yarn	10	0	0	TR 6.4
	Coir yarn	3	0	0	TR 2.4
	PP fibres	10	6.6	0	TR 8.0
	Jute fabrics	20	10	0	TR 12.8
	PP fabrics	12.5-20	8.2-10	5; 0 for LDCs	TR 10, import authorization
	Jute, sisal, abaca twines	3.7-10	0-4	0	TR 3-6.4, import authorization
	PP twines	8	5.3	0	TR 6.4, import authorization
	Jute sacks	0	0	0	TR 12.8
	PP sacks	5.8	3.9	0	TR 5.8
	Carpets	10.5-12	0-7.9	0-4.8	TR 8.4
USA	Raw jute, sisal, coir, abaca	0	0	0	
	Propylene	0	0	0	
	Polypropylene	12.5	6.5	0	

Country	Product description	MFN tariff a/		GSP tariffs	Other barriers
		Pre-UR	Post-UR		
	Jute yarn Coir yarn PP fibres	3-4 0 4.9	0 0 4.3	0 0 -	
	Jute fabrics PP fabrics	0-1 17	0 8.5-12	0 -	MFA, textile export restraints (TER)
	Jute, sisal, abaca twines PP twines	0-7.2 5.3-8	0-3.6 2.7-7	0 0	MFA, TER
	Jute sacks PP sacks	0 3	0 3	- 0	
	Carpets Coir carpets	4.8-6.6 or 0.215 $/SM	0	0 0	MFA, TER

Source: Compiled on the basis of data from the Uruguay Round Multilateral Negotiations, country schedules (Tariffs), and from UNCTAD TRAINS database (Other barriers and GSP tariff).

a/ Tariff items numbers of individual products according to the Harmonized System classification are given in the annex.

Note: Pre-UR tariffs stand for base rates in the country lists of concessions, post-UR tariffs mean bound rates on completion of the transitory period following the Uruguay Round.

Main export markets for JHF and products thereof in developing countries are in Pakistan, Thailand, Indonesia, Egypt, Iran and India for raw jute,[8] in Sudan, Syria, Iran (Islamic Republic of), Egypt and Algeria for jute products,[9] in the Republic of Korea and Egypt for raw sisal[10] and in the Republic of Korea

[8] Major importers of raw jute in 1992/93 (in mill. US$) were Pakistan (38), the EU (14), Thailand (13), Indonesia (9), Egypt (7), former USSR (6), Iran (4) and India (4).

[9] Major importers of jute products in 1992 (in mill. US$) were the EU (229), former USSR (81), the United States (59), Sudan (41), Australia (36), Syria (35), Iran (32), Egypt (15) and Algeria (12).

[10] Major importers of raw sisal in 1992 (in mill. US$) were the EU (21.2), Republic of Korea (2.7), Japan (1.8), Morocco (1.7), Poland (1.4) and Egypt (1.0).

for abaca [11]. These markets are generally much more protected against imports and, as price considerations still prevail in developing countries over environmental concerns, high level of tariffs acts as an efficient impediment to an increase in exports of JHF and related products to other developing countries.

Furthermore, a number of developing countries have only one tariff rate and reduced rates or preferential schemes vis-à-vis other developing countries are rarely in place. Moreover, a number of these countries are currently not contracting parties to WTO[12] and, as a result, their import regimes will remain unaffected by the Uruguay Round.

As a result of fiscal considerations or the decision to protect domestic industries, the overall tariff level in developing countries is relatively high. Processed products are more affected than raw materials, hence, tariffs escalate with the increasing degree of processing. Among the countries covered in this report, import regime is the most liberal in the Republic of Korea (10 per cent duty on raw materials, 20-30 per cent on manufactures), in Indonesia (0-5 per cent, 5-40 per cent, respectively) and Algeria (3-7 per cent, 3-60 per cent). In the remaining countries, tariffs frequently exceed 50 per cent and are supplemented by additional taxes and non-tariff barriers. In India and Pakistan, the combined incidence of duties and taxes exceeds 100 per cent. In Thailand, imports of jute sacks are generally banned. At times, tariff structure is biased in favour of JHF as compared with synthetics; in other cases the system as a whole remains relatively neutral. The main consideration does not seem to be the protection of domestic JHF industry, but the protection of domestic petrochemical interests.

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[11] Data on import regimes of Egypt, Iran, Sudan and Syria are not available in the UNCTAD TRAINS database.

[12] Algeria, Sudan, Syria, Iran and, among countries in transition, Russia, are currently not members of WTO.

Table 7. Tariff and non-tariff barriers on imports of JHF and competing synthetic products in major developing country markets
(in percentage)

Country	Product description	Tariffs		Other barriers
		Pre-UR	Post-UR	
Algeria (MFN rate)	Raw jute, sisal, coir, abaca Propylene Polypropylene	3 7 15		1 per cent customs formality tax on all imported items
	Jute yarn Coir yarn PP fibres	7 7 3		
	Jute fabrics PP fabrics	40 40		
	Jute, sisal, abaca twines PP twines	25 25		
	Jute sacks PP sacks	40 40		
	Carpets	60		
India (MFN rate; general rate (G)-if MFN non-existent)	Raw jute Raw sisal Raw coir and abaca Propylene Polypropylene*	45 45 G 45 G 115 95 G	40 40 40 25	non-automatic licence (NAL) NAL NAL, canalized imports NAL
	Jute yarn Coir yarn PP fibres	105 G 105 G 145 G	40 40 40	NAL NAL
	Jute fabrics* PP fabrics*	110 G 110 G		NAL NAL
	Jute, sisal, abaca twines PP twines	145 G 145 G	40 40	NAL NAL
	Jute sacks* PP sacks*	110 110 G		NAL NAL
	Carpets*	110 G		NAL

Country	Product description	Tariffs		Other barriers
		Pre-UR	Post-UR	
Indonesia (customs duty)	Raw jute, sisal, coir, abaca*	5		2.5% import tax on all items in the table 20% surcharge
	Propylene*	0-5		
	Polypropylene*	0-5		
	Jute yarn*	10-20		
	Coir yarn*	10-20		
	PP fibres*	5		
	Jute fabrics*	20-30		
	PP fabrics*	30		
	Jute, sisal, abaca twines*	5-10		
	PP twines*	10		
	Jute sacks*	20		
	PP sacks*	15-40		
	Carpets*	35		
Republic of Korea (general import duty)	Raw jute, sisal, coir, abaca	10	2	
	Propylene	10	0-5	
	Polypropylene	20	6.5	
	Jute yarn	20	13	
	Coir yarn	20	13	
	PP fibres	20	13	
	Jute fabrics	30	13	
	PP fabrics	30	13	
	Jute, sisal, abaca twines	25	13	
	PP twines	25	13	
	Jute sacks	30	13	
	PP sacks	30	6.5	
	Carpets	35	30	
Pakistan (customs duty)	Raw jute, sisal, coir, abaca*	16, 56 for abaca		IQRA surcharge of 5% on all items in the table
	Propylene	56	50	
	Polypropylene*	66		
	Jute yarn*	56		
	Coir yarn	56	40	
	PP fibres	47	40	
	Jute fabric*	96		
	PP fabric*	96		NAL

Country	Product description	Tariffs		Other barriers
		Pre-UR	Post-UR	
	Jute, sisal, abaca twines	96	50	
	PP twines	96	50	
	Jute sacks*	96		
	PP sacks*	96		
	Carpets*	96		NAL
Thailand (customs duty)	Raw jute, sisal, coir, abaca*	30		1.5% business tax (BT), 11% standard profit rate (SPR), import licence
	Propylene	30	30	1.5% BT, 8.5-10% SPR
	Polypropylene	40% or 8 BHT/kg	30% or 6 BHT/kg	1.5% BT, 16% SPR
	Jute yarn	30	15	5% BT, 11% SPR
	Coir yarn	30	15	5% BT, 11% SPR
	PP fibres*	30		1.5% BT, 11% SPR
	Jute, sisal, abaca twines	40	30	9% BT, 11% SPR
	PP twines	40	30	1.5% BT, 11% SPR
	Jute sacks	30% or 15 BHT/kg	30% or 15 BHT/kg	9% BT, imports generally banned
	PP sacks	60% or 14 BHT/kg	30% or 7 BHT/kg	1.5% BT, 16% SPR
	Carpets	100% or 70 BHT/kg	30% or 21 BHT/kg	9% BT, 16% SPR

Source: Compiled on the basis of data from the Uruguay Round Multilateral Negotiations, country schedules (Tariffs), and from UNCTAD TRAINS database (Tariffs, Other barriers).

Note: Items marked with * were not included in the country schedules of the Uruguay Round negotiations

Baht: national currency of Thailand.

Main hard JHF importers among countries in transition are Russia (ex-USSR being the second largest world importer of jute products in 1992) and Poland (raw sisal imports). The level of protection through tariffs is not high in these countries. Tariffs may, however, be substituted by other instruments of protection, such as those linked to foreign-exchange policy. In the Polish market, the uniform level of tariffs on raw material is 5 per cent, with higher rates (10-20 per cent) for processed products, and especially carpets (30 per cent). This level of protection will further fall to 0 to 18 per cent after the implementation of the Uruguay Round. The Russian market is entirely open, with practically all items imported duty-free, except sacks and carpets (taxed 15 and 30 per cent, respectively).

2. Access to distribution networks

The market structure in importing developed countries seems to have a major bearing on JHF export in some markets. First, an unequal power relationship between developed country importers and developing country exporters, coupled with the lack of information about potential buyers, renders effective access to developed country markets difficult.

Secondly, if the imported product competes directly or indirectly with domestic production, vested interests can act as an impediment to these imports. This happened, for example, in the EC market where imported sisal twines competed directly with domestic producers of the same goods and indirectly with domestically produced polypropylene twines. The oligopolistic structure prevailing in the marketing and distribution of both sisal and synthetic twines in this market constituted an effective barrier to market access for outsiders. This meant, on the whole, that production, import and distribution of both sisal and synthetic twines got highly concentrated in the hands of a small number of manufacturers/importers acting as price-makers in their respective regional markets. The EC manufacturers/importers thus proved capable, by shifting resources into what was most profitable for them at the moment, or by cross-subsidization practices, to develop a system in which domestic sisal industry found its place and to which developing country competitors had to accommodate. In the USA, by contrast, the market showed a higher degree of openness, due to the almost complete separation, and hence absence of link between the sisal manufacturing industry and the synthetic twine industry.

Table 8. Tariffs on imports of JHF and competing synthetic products in major countries in transition
(in percentages)

Country	Product description	MFN tariff		GSP	LDCs
		Pre-UR	Post-UR		
Poland (customs duty)	Raw jute, sisal, coir, abaca	5	0	1.4-	0
	Propylene	5	3	2.1	0
	Polypropylene	15	9	3.5	0
				10.5	
	Jute yarn	10	6	3.5	0
	Coir yarn	10	6	3.5	0
	PP fibres	20	12	3.5	0
	Jute fabrics	20	12	3.5	0
	PP fabrics	15	9	3.5	0
	Jute, sisal, abaca twines	15	9-12	0	0
	PP twines	15	9	3.5	0
	Jute sacks	30	18	7	0
	PP sacks	15	9	3.5	0
	Carpets	30	15	21-28	0
	Coir carpets	30	15	10.5	0
Russia (MFN)	Raw jute, sisal, coir, abaca	0			
	Propylene	5			
	Polypropylene	5			
	Jute yarn	0			
	Coir yarn	0			
	PP fibres	0			
	Jute fabrics	0			
	PP fabrics	0			
	Jute, sisal, abaca twines	0			
	PP twines	0			
	Jute sacks	15			
	PP sacks	15			
	Carpets	30			

Source: Compiled on the basis of data from the Uruguay Round Multilateral Negotiations, country schedules (MFN tariffs), and from UNCTAD TRAINS database (GSP and LDC tariffs).

IV. Action to improve jute and hard fibres position in the market

A consensus has generally been reached, among the actors involved in the JHF production and trade, that urgent action is needed to reverse the long-term declining trend in JHF markets and to improve competitiveness of products made from these fibres. To this end, further investment in both technical development and modernized equipment in JHF-processing industries and in market promotion are indispensable. Some of the supporting activities may be carried out at the national level whereas others could be more effectively undertaken through international cooperation or by umbrella international organizations. Among these, FAO, the International Jute Organization (IJO) and the International Trade Centre UNCTAD/GATT (ITC) hold a prominent place, with UNIDO also engaged in this domain. Cooperation is also vital among JHF producers, processing industries, traders and researchers in producing and consuming countries, as well as an active participation of international organizations, in order to minimize and, as far as possible, to counter the consequences of the loss of markets.

A development strategy for JHF should comprise a range of short- and long-term measures aimed at: (a) halting the erosion of markets for traditional JHF products and, possibly, expanding their consumption further (in the short term); and (b) regaining lost market shares through development and commercialization of new, diversified JHF products in the longer run.

A. Traditional products

Traditional products represent an overwhelming majority of JHF-based products exports (97% in world jute products imports, for example[13]). As has already been stated above, JHF in their traditional uses are confronted with constantly shrinking markets due to technological developments, e.g. in bulk-handling techniques, and competition from synthetics.

The trend towards the use of more efficient and cost-saving techniques seems irreversible and affects all packaging materials, including synthetics. However, a jute-based alternative to containerization might be provided by innovated jute intermediate bulk containers (JIBC), able to carry a load of 500 to 1000 kg.

The intensity of competition by plastics vis-à-vis JHF in their traditional end-uses will continue to be determined by their relative prices, their respective technical properties and the reliability of supplies. Moreover, a new factor has increasingly been taken into consideration when comparing the competitive positions of both materials. The rising concern over ecology and over the impact on the environment of the use and disposal of synthetic materials has led to a renewed interest in the advantages of natural fibres. In fact, the generic promotional campaign for JHF products launched by ITC and IJO was largely based on the environmental attributes of these fibres.

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[13] **A.M. Raza Chowdhury: Development of appropriate technology and marketing strategies for traditional and diversified jute, kenaf and other allied products, JU/EGM CRS.6, FAO, Rome 1994**

JHF show a distinct competitive edge over synthetics in a number of environment-related areas. First, energy consumption in the production and transformation of synthetic raw materials is about 10 times higher than that needed for natural fibres. Secondly, while synthetics release considerable amounts of CO_2 during their life-cycle, natural fibres absorb harmful gases rather than release them. Thirdly, JHF represent quickly (on a year's basis) renewable resources, whereas production of polypropylene is based on the use of non-renewable fossil resources. Fourthly, the major advantage of JHF, however, and the most appealing to consumers' concerns, is related to the waste-disposal stage of the product's life.

Natural fibres are fully biodegradable while, broadly speaking, synthetic materials are not, although sizeable amounts of financial resources are being spent by the petrochemical industry to attain this goal in the future. Similarly, the currently available recycling technology for synthetic materials and waste collection practices, including manual separation and chemical segregation practices, permit only a small proportion of synthetic waste[14] to be recycled economically, as compared with JHF which are normally recycled except for the re-use of bags.[15] Furthermore, when disposed of, synthetics may have a seriously damaging impact on the environment, due to the release of a number of toxic substances.

On balance (see table 9), natural fibres are more environmentally sound and thus, less costly to society, than competing synthetic materials. Moreover, should environmental externalities related to synthetics be internalized, the present cost and price relationship would change in favour of natural fibres, rendering them more competitive.

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[14] It has been reported that in the United States less than 1 per cent of total plastic waste is recycled (European Chemical 21/1989), and about 4 per cent in Europe (Financial Times 19 July 1989).

[15] About 35 per cent of cocoa bags and 50 per cent of nut bags are currently reused in Europe and an even greater proportion of all used sacks are recycled (S. Cousins: European practice for disposal and recycling of used jute bags, ESC: JU/ICF 93/19, FAO, Rome 1993).

Table 9. Environmental impact assessment of jute and polypropylene

	Jute	Polypropylene
Total energy consumption	3.75-8.02 GJ/t of fibre[16]	84.3 GJ/t of fibre
Total CO_2 emission	-l.6-0 t/t of fibre	3.7-7.5 t/t of fibre
Type of resources used	+ renewable	- non-renewable
Production stage	+ improves soil fertility; + reduces incidence of weeds and plant diseases; = retting waste biodegradable, but resulting oxygen depletion in water can increase mortality of certain fish	- nitrogen dioxides and sulphur dioxides are emitted into the air, contributing to the "acid rain"; - waste water and solid waste contain bioaccumulating substances like heavy metals
Transfor-mation stage	- petroleum-based mineral oil used in batching; = burning production wastes generates energy, but also pollutants; - dust and noise are major problems as regards work conditions	
Transport stage	consumption of energy 0.19-0.27 GJ/t	consumption of energy 3.9 GJ/t
Consumption stage	- mineral oils used in batching tend to migrate into the foodstuff from the packaging material	
Disposal stage	+ biodegradable, without a negative environmental impact if suitable methods are selected (composting, production of biogas); + re-usable; + recyclable	- carcinogenic substances released into the environment; - plastic trash threatens farm animals, birds and wildlife; - the remains of drift nets kill marine animals

Source: UNCTAD Secretariat. All figures taken from Environmental Impact Assessment of jute and kenaf, ESC: JU 93/3, FAO, Rome 1993.

\+ stands for a positive impact;
\- stands for a negative impact;
= means that findings are inconclusive.

In view of these factors which will impinge on the relative competitiveness of jute and hard fibres versus synthetics, the short-term strategy for jute and hard fibres should focus on three key issues:

Price competitiveness of traditional JHF products, as well as overall attractiveness for growers, should be further enhanced. To this end, a range of actions covering each stage from jute farming to jute manufacturing need to be undertaken. First, yield levels need to be increased through the development of new varieties with higher fibre content that are more resistant to insect pests and disease (e.g. by breeding jute and kenaf), by the application of cost-effective agricultural practices and wider use of appropriate machinery such as seeders and weeders. Secondly, costs should be reduced at the processing stage by the implementation of new technologies and the use of more efficient machinery which, apart from cutting costs, would allow for the use of lower grade or waste fibres and improve the quality of the product. In this context, there is a need for extension programmes transferring new technologies to the grassroots level.

Technical properties and quality of JHF products need to be strengthened. As regards quality, attention should be paid to: (a) the setting of objective parameters for different fibre grades; (b) the establishment of testing laboratories; (c) the improvement of communication between researchers and growers; and to (d) the creation of price incentives for higher graded/higher quality products.

The main technical disadvantages of JHF vis-à-vis synthetics should be reduced or eliminated through R & D efforts. For example, the problem of negatively perceived odour and fibre shredding in jute products may be resolved through developing new processing techniques. Lighter cloth for sacks suitable for automatic filling systems may also allow jute to recapture a part of its lost market share in packaging. Additional strength and resistance in pulling and to endure pressure might improve the relative competitiveness of sisal twines or jute wool packs.

As JHF are promoted mainly on grounds of their environmental attributes, efforts should be directed towards the elimination or mitigation of remaining problems related to JHF production and disposal. As a result, the credibility of JHF environmental claims would be reinforced. With regard to jute, less-polluting retting technologies should be introduced. Moreover, means of using retting waste should be examined (e.g. retting-cum-pisciculture).

A major problem in jute packing is currently caused by concerns about the presence of certain hydrocarbon residues due to the use of mineral batching oil in jute processing. The replacement of mineral oils by vegetable substitutes (palm oil, castor oil) requires substantial capital investment and results in performance and efficiency losses.[17] Moreover, even vegetable oils are not necessarily without environmental risks as they encourage mould growth and infestation. For this reason, producers argue that it would be excessively demanding to require complete elimination of hydrocarbons in the short run. An

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[17] **In Bangladesh, for example, the extra production cost for hydrocarbon-free jute products is estimated at about 10 per cent above the traditional products.**

option might be to reach an agreement on a reasonable and safe level of hydrocarbon residues, given also the fact that no objection has been made to the use of mineral batching oils for rice bags in Japan and also because a wide range of cosmetic and pharmaceuticals are based on mineral oils and yet cleared without apparent concern by health authorities.

Further problems arise with respect to the claimed reusability of JHF manufactures. Owing to wage rises in developed countries, the cost of opening the stitching of jute bags correctly appears too high as compared with the price obtainable for used sacks. Many bags are therefore cut open manually or by automatic bag-opening equipment. This renders the bag useless for re-use. A most obvious solution would be the development of a quick-release bag-closure system. Recycling is hampered by the presence of synthetic materials, such as polypropylene sewing yarn. A return to jute sewing threads would therefore be required.

More stringent environmental legislation is being introduced in developed countries, according to which the producer or importer of a package to a particular country has to organize and pay for all necessary measures to dispose of the used packaging. This was, among others, intended to encourage the use of easily recyclable materials. In Germany, for example, the charge for recovering packaging is set by the German Dual System, the reference body for recycling charges, at DM 0.20/kg for packaging made from natural fibres as compared with DM 3.00/kg for plastics. However, in a number of countries, recycling of JHF encounters the problem of the lack of recycling facilities for this particular material. Consequently, buyers may give preference to less environment-friendly packing for which recycling facilities are in place.

There have also been some concerns about the environmental impacts of JHF production, especially in relation to the use of fertilizers, herbicides and pesticides. In reality, peasant farmers growing these crops can seldom afford agricultural chemicals and chemical pollution caused by their use is therefore rather low. However, market acceptance of JHF products might be fostered if a credible certification system for organically grown or chemical-free jute is developed. To qualify for this certification, jute products may need to meet the following criteria: (a) grown with organic fertilizers; (b) free of chemical pesticides; and (c) free from petroleum batching oils.

B. Non-traditional products

Given the long-term erosion of JHF traditional markets, the development of new diversified products has become urgent, possibly outside the area of competition with synthetics. If successful, this strategy might, in the long run, reverse the declining trend in JHF products market shares and, hopefully, open new outlets for these natural fibres. As a matter of fact, a number of new uses of JHF have been developed in recent years, which, though accounting for relatively small quantities of fibre at present, seem to offer potential for future development. Two broad categories of products can be identified in this context: (a) non-traditional products for technical uses; and (b) non-traditional consumer products. Promotional campaigns for both of them strongly emphasize environmental friendliness as a major attribute, apart from a competitive price and technical properties. Hence, three attributes are frequently used in promoting JHF products: "effective, economic and environment-friendly".

1. Non-traditional products for technical uses

These products capitalize on superior environmental performance of JHF vis-à-vis competing materials. Two environment-friendly properties of JHF are emphasized while promoting this group of products, namely biodegradability and quick renewability.

Taking advantage of biodegradability (absorbed by nature within 3-6 months) the production of geotextiles and geo-engineering material is considered to be one of the diversified end-uses of jute offering the greatest potential. JHF have a natural appearance and decompose once the protective vegetation has become established. Moreover, their residues are beneficial, adding substances which improve the structure of the soil.

The present market of geotextiles is estimated at 700 million sq. metres and expected to reach as much as 1,400 million sq. metres by the turn of the century. For the time being, however, this market is dominated by synthetics. In future, JHF geotextiles, with their inherent advantage, may have the potential to gain a larger share of this expanding market, especially in civil construction (erosion control of mountain slopes, road and railways slopes and canal embankments, etc.) and agricultural uses (mulching, moisturing, horticultural pads, etc.) Recycled fibres can also be used for these purposes. Jute geotextiles are already commercialized under different brand names, such as "Geo-jute", "Soil-saver", etc. Geojute being a bulk item, its increased use could partly offset some of the loss of markets for jute in traditional products. Technology to produce geotextiles on the basis of sisal is currently being developed as well.

In order to enhance the use of natural fibres-based geotextiles, market development programmes are considered crucial along with education of users, such as the national corps of engineers, highway-construction departments, construction industries and municipalities with responsibilities for prescribing standards for geofabrics and for the selection of the appropriate type of geotextiles.

Quick renewability of JHF is a prominent feature in market promotion for paper made from these fibres where slogans were used, such as "Paper from quickly renewable natural resource", "Save old forests and grow jute for making paper" or even "The tree-free paper". Good prospects seem to open up according to techno-economic viability assessments of pulp making, to kenaf, due to its long-fibre properties and low-lignin content, especially in the manufacture of specialty paper. Kenaf has the highest pulping potential among competing fibres and it can grow from seedlings to a mature 20 feet tall plant in 120 days. Its use in the paper-making industry may be particularly promising in rapidly growing Asia where the raw material supply for the production of paper poses a major problem. Already in Asia, non-wood fibre-pulp production (from rice straw, bamboo, reeds and leaf fibres) is twice as great as wood-pulp production, but still insufficient to meet the anticipated local requirements. The Phoenix Pulp and Paper Company has already been producing paper pulp from kenaf at Khonkaen, Thailand, for some years.

A new, important growth area might open in a more distant future to JHF in the production of composite materials. In the USA, for example, a motor industry has been working on the development of composite fibre materials suitable for the manufacture of a simple vehicle body. Similarly, in the Netherlands and Brazil, other companies are already supplying non-woven materials

to the automotive industry. Jute/polymer composites seem to have considerable advantage in these end-uses over conventional glass fibre/polymers.

2. Non-traditional consumer goods

In order to make significant inroads into markets of developed countries, diversified consumer items produced from JHF may capitalize on emerging market trends and changing consumer values. Three predominant features in consumer behaviour may be instrumental in positioning JHF products in the market, namely: (a) a preference for environment-friendly and natural products; (b) attraction of "authentic" products; and (c) interest in "third world" or "fair" products.

Environmental benefits of JHF fit the environmental concern of consumers and corresponding governmental policies in industrialized countries. These fibres are also well suited to the category of the "natural store" for chairs, furniture, home textiles, carpets and clothing. At a later stage, this market could be extended to general stores. The green J-logo "Jute. The natural fibre." of the International Jute Organization and the slogan "The natural fibre is a natural choice" accurately reflect the environment-friendly component in JHF-based products.

The attractiveness of jute as an "authentic" and "real" product falls into a consumer trend in the 1990s, characterized by the return to "authentic products and lifestyles", without artificial colouring, taste, additives and other ways to "improve" the product. Many consumers start to prefer the authentic and real over the artificial product.

A segment of consumers also favours and buys "third-world items" in order to help the countries of origin by paying a fair price to producers in these countries. This is inspired by feelings of fairness, equity and contribution to the redistribution of income at a global scale. Third-world stores and magazines in the West are corresponding outlets to reach these consumers.

Consumer items made of JHF include floor coverings, wall coverings and home textiles, bags and luggage, shoes and clothing.

The use of synthetic materials for carpets and carpet backing has led to a debate in developed countries over indoor air pollution. The awareness of the “sick” building syndrome now affects the choices made by interior designers and architects. JHF (jute, coir) floor coverings offer the important advantage that they are free from synthetic backing, scotch guard and many of the other chemicals found in flooring products. Sales of JHF carpets are also supported by the switch to the natural look in interior decoration.

JHF, and particularly jute, have a special appeal for applications such as curtain materials, upholstery and wall coverings. They give them the texture of a natural material and the touch of warmth. Jute wall coverings had a considerable market in Western Europe, but because of technical problems including colour fastness and the presence of lignin they are displaced by alternative materials. These problems need to be addressed urgently for the successful development of this end-use. This is also important in the light of the fact that the production of decoratives has a special significance for employment in the traditional handloom industry, especially in India where it employs around 10 million weavers.

As regards luggage, the main potential for jute in particular lies in the high-fashion handbags, with some opportunity also for soft travel luggage. The

shopping bag market represents another opportunity if the low-priced synthetic bags could be substituted by reusable jute bags competitively priced. In view of the growing environmental concerns and waste disposal problem, low-cost disposal bags for dry waste may find a potential market in the developed countries.

Jute fibre can be used along with cotton or wool for manufacturing fabrics which are suitable for blankets and apparel such as suiting materials, shirting, wrappers, jeans, cardigans and jackets. For example, a blend of jute and cotton, called jutton, has been developed. For this use, it is indispensable to develop finer yarn and suppress the natural hairiness and roughness of the fibre.

Non-traditional JHF products still represent a fraction of JHF products imports (3 per cent in the case of jute). Although some of these products have been developed for quite some time now, no breakthrough has yet been achieved in selling them in bulk. The promotion of diversified JHF products is admittedly a new concept and therefore new industrial and marketing approaches must evolve. The comprehensive strategy to be followed in this regard should encompass the encouragement of R and D in developing new uses through adoption of appropriate technology and facilitate commercialization of new products through material incentives, at least initially. The establishment of market channels with close links with end-users, or the full use of existing facilities, as well as vigorous publicity for new products also are important measures to improve the marketing of diversified jute products.

ANNEX

Harmonized System tariff items

Product description	Tariff item number
Raw jute fibres	53.03.10
Raw sisal fibres	53.04
Raw coir (coconut) fibres	53.05.11
Raw abaca fibres	53.05.21 53.05.29
Propylene	27.11.14 29.01.22
Polypropylene	39.02.10
Jute yarn	53.07.10 53.07.20
Coir yarn	53.08.10
PP fibres	55.03.40
Jute fabrics	53.10.10 53.10.90
PP fabrics	55.15.91 55.15.99
Jute twines	56.07.10
Sisal twines	56.07.29
Abaca twines	56.07.30
PP twines	56.07.41 56.07.49
Jute sacks	63.05.10
PP sacks	39.23.29
Carpets	57.01.90 57.02.10
Coir carpets	57.02.20